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U.S. DEPARTMENT OF LABOR
WORKPLACE STANDARDS ADMINISTRATION
Bureau of Labor Standards

Form No. L58-OOS-4
May 1969

Master **HN-23**

MATERIAL SAFETY DATA SHEET

Reference

DPM 1278
CATALYST

SECTION I	
MANUFACTURER'S NAME Ethane Plastics, Inc.	EMERGENCY TELEPHONE NO. 213/247-6210
ADDRESS (Number, Street, City, State, and ZIP Code) 5121 San Fernando Rd. W., Los Angeles, CA 90039	
CHEMICAL NAME AND SYNONYMS Poly Ethylene triamine	TRADE NAME AND SYNONYMS EPOCAST Hardener HN-23
CHEMICAL FAMILY Alkylenamines	FORMULA N/A High Polymer

SECTION II HAZARDOUS INGREDIENTS					
PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

SECTION III PHYSICAL DATA			
BOILING POINT (°F.)	400°F	SPECIFIC GRAVITY (H ₂ O=1)	.95-.96
VAPOR PRESSURE (mm Hg.)	1	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR=1)	3.5	EVAPORATION RATE (_____ = 1)	0.01
SOLUBILITY IN WATER	Complete		
APPEARANCE AND ODOR Pale yellow liquid, strong amine odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (Method used) C.O.D. 200°F.	FLAMMABLE LIMITS N/A	Lel	Uel
EXTINGUISHING MEDIA Water or CO₂ or foam.			
SPECIAL FIRE FIGHTING PROCEDURES Water will dilute, cool and also absorb noxious fumes.			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE 10 ppm

EFFECTS OF OVEREXPOSURE Eye and throat irritant, skin contact will cause burns. Strong sensitizer will cause dermatitis.

EMERGENCY AND FIRST AID PROCEDURES Remove to fresh air, flush eyes and skin for 15 min. with water. Get medical aid for eyes, wash skin with soap and water. Launder contaminated clothing before reuse.

SECTION VI REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATIBILITY (Materials to avoid) Acids and peroxides

HAZARDOUS DECOMPOSITION PRODUCTS None

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Avoid skin contact, provide adequate ventilation and flush to sewer with large quantities of water.

WASTE DISPOSAL METHOD Incinerate.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Chemical cartridge type in closed area.

VENTILATION	LOCAL EXHAUST Preferred	SPECIAL Exhaust all curing ovens
	MECHANICAL (General) Acceptable	OTHER to fresh air.

PROTECTIVE GLOVES Rubber or poly EYE PROTECTION Splash protection goggles.

OTHER PROTECTIVE EQUIPMENT Suggest protective skin creams.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Avoid temperature extremes and contamination.

OTHER PRECAUTIONS Suggest safety eye bath. See Furane Safety bulletin attached.

W. J. Dewar 9/10/73

WE HAVE INSERTED A PRODUCT BULLETIN GIVING
APPLICATION INSTRUCTIONS, A COMPLETE SAFETY
BULLETIN AND OUR WARRANTY STATEMENT WITH THE
SHIPPING DOCUMENTS. WE REQUEST THAT YOU MAKE
EVERY EFFORT TO SEND THESE IMPORTANT DOCUMENTS
TO THE AREAS IN WHICH THE MATERIALS WILL BE USED
AND THE PERSONNEL USING THE MATERIALS.

* * * * *

WARRANTIES:

Except for a warranty that materials substantially comply with the data presented in the technical bulletin (the basis for this substantial compliance is to be determined by the standard quality control tests generally performed by Furane), all materials are sold "as is" and without any warranty express or implied as to merchantability, fitness for a particular purpose, patent, trade mark or copyright infringement, or as to any other matter. Buyer waives all rights against Furane arising by operation of tort or contract law or otherwise, whether or not such rights arise by reason of the active or passive negligence of Furane. Furane's liability shall not be greater in amount than the price paid to Furane of specific material sold, which is found to be defective. Any sale of the materials shall be subject to the terms and conditions of Furane's invoice. Trial samples of Furane's products or formulations should be evaluated by Buyer before production use. Buyer should fully understand processing characteristics, toxicity of compounds, and cured properties and performance of the materials. 11-71.



FURANE PLASTICS INCORPORATED
A SUBSIDIARY OF M&T CHEMICALS INC.

TECHNICAL BULLETIN

SAFETY PRECAUTIONS

To Be Used In Handling
Epoxy and Urethane Resins

EP-54-8-D

There are two components which make up most epoxy resin systems:

1. The **RESIN** (with or without filler). (Sometimes labeled "A" Component.)
2. The **HARDENER**, in a fluid or paste-like consistency. (Sometimes labeled "B" Component.)

RESIN

There are several types of epoxy resins—some are safe to handle, others are not safe and should not contact the skin. Some individuals may show allergic tendencies with these materials and should follow precautionary measures noted below. Some resins may have diluents added to facilitate their processing, and these diluents may be harmful or noxious in odor. In either case, follow precautionary measures below.

HARDENER

Hardeners, or cure agents as they are called, differ in their ability to cure resins, as well as their tendency to cause skin irritation or dermatitis. Most room temperature set hardeners are based on polyamines (such as diethylene triamine). If proper precautions are followed, hardeners can usually be handled without difficulty. Safety hardeners are now available, though infrequently an individual shows an allergic reaction to these. This usually appears after repeated or prolonged contact with the hardener. The elevated temperature curing agents are generally aromatic amine or acid anhydrides. Most aromatic amines will tend to discolor the skin. Follow precautions noted below.

Since epoxy formulations have varying degrees of hazard, the Society of the Plastics Industry (SPI) has produced a guide for classification of products for the benefit of the industrial user. With this knowledge, the user should be able to safely handle these products. The hazard category is given in terms of degrees as follows:

- Class 1 - Practically non-irritating
- Class 2 - Mildly irritating
- Class 3 - Moderately irritating
- Class 4 - Strong sensitizer
- Class 5 - Extremely irritating
- Class 6 - Suspected carcinogen in animals.

PRECAUTIONARY MEASURES (Read Carefully)

1. Mix and apply materials in well ventilated areas, preferably with a forced air draft to carry away fumes. Ovens used to heat cure epoxies should be safely ventilated to outside areas.
2. Avoid contact of materials with the skin. Use rubber gloves, preferably with a cloth liner, to absorb perspiration.
3. Wear protective clothing when material contact is anticipated. Long rubber or vinyl coated gloves with cloth interiors are suggested, and goggles or eye shields to protect the eyes if splashing of the hardener occurs.
4. Observe good personal hygiene. Avoid contaminating clothing or the inside of gloves. Use soap and warm water at frequent intervals to clean hands and **do not** use strong cleaning solvents such as acetone or methyl ethyl ketone which dissolve protective oils from the skin. If cleaning of epoxy resin from clothing is necessary, a 50:50 mixture of denatured alcohol and toluene is suggested. Use denatured alcohol only to clean hands or skin.
5. Maintain good housekeeping and do not leave deposits of epoxy resins or hardeners on work areas, bottles, door-knobs, etc. Wipe off immediately with paper towels or rags. Use disposable mixing containers and throw-aways wherever possible.
6. Some individuals find that the application of barrier creams to hands and face is desirable before beginning work. (West Disinfectant 411 and Kerodex are among creams found satisfactory at Furane. Your physician can recommend others.) Reapply barrier creams after washing hands.
7. Should skin afflictions or irritations appear, qualified medical help must be obtained. He should be informed that skin irritation could have been caused by aliphatic polyamines. In uncomplicated cases, the skin irritations will disappear quickly, and in serious cases, it may require a few days to clear. In general, irritations may reappear when work is resumed, unless adequate protection is followed.

Page 1 of 2 pages

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(213) 247-6210 • TWX (910) 497-2060



A SUBSIDIARY OF M&T CHEMICALS INC.

P. O. BOX 791 RAHWAY, NEW JERSEY 07065
(201) 499-2551 TWX 710-996-5842

Before beginning to use material, please read carefully Furane's bulletin outlining safety precautions, operating procedures, and non-warranty features.

The suggestions and methods of application described in this instruction sheet have been based upon careful laboratory investigations. Since operating conditions in the fabricator's plant are beyond our control, Furane Plastics cannot assume responsibility for any risks or liabilities which may result from the use of its products. It is recommended that trial samples be evaluated before production applications of epoxy resins are attempted, in order to familiarize personnel with curing and handling properties of the material. In any event, liability shall be limited to cost of material purchased from Furane. Unless otherwise indicated, this material is to be considered past its storage life twelve (12) months after delivery to customer.

SAFETY PRECAUTIONS

To Be Used In Handling Epoxy and Urethane Resins

EP-54-8-D

Persons who are known to be particularly susceptible should be immediately transferred to work which entails no risk whatsoever of dermatitis.

8. These materials are for **professional and industrial use only** and should be kept away from children.

9. If you have any doubts or skin irritations, see your doctor for professional guidance.

SAFETY PRECAUTIONS WHEN USING URETHANES

The general precautions applicable to handling the components of an epoxy system are applicable to the handling of urethanes. Please read and put into practice recommendations shown above.

Urethane reaction materials which involve isocyanates are potentially hazardous in both the liquid and vapor states. They may act as irritants to the skin and mucous membranes, especially the eyes and upper respiratory regions, where in some allergic individuals asthma-like attacks may occur. Concentrations below the odor threshold may affect sensitive persons who are subject to hayfever and asthma. If you suspect problems or show skin sensitivity, see your doctor for professional guidance.

Skin exposure should be avoided, and accidental spillage must be thoroughly removed by washing with soap and water. Eyes should be irrigated with large quantities of water and a physician consulted. To avoid hazards when working continually in a urethane atmosphere, protective clothing, eye shields, and gloves are suggested, as well as outside air-supplied respirators where vapor concentrations are high.

There are certain types of resins and hardeners which are considered more toxic than others. In keeping with industry requirements, a special precautionary label is

affixed to the containers. The language of the label is as follows:

"DANGER—Prolonged or repeated contact of liquid or breathing of vapors or mists may cause delayed and serious injury. Do not get on skin or clothing. Avoid inhalation of vapor or mists. In case of skin contact, wash thoroughly with soap and water. Remove contaminated clothing and wash thoroughly before reuse."

The following notice applies to Furane's resin systems:

NOTICE

The suggestions and methods described in individual product technical bulletins, information sheets, or explanatory labels have been based upon careful laboratory investigations. Since operating conditions in the fabricator's plant are beyond our control, Furane Plastics cannot assume responsibility for any risks, or liability, due to any personal injury or property damage which may result from the use or handling of its products whether or not in accordance with directions. The buyer assumes all risk and liability from such handling, storage, or use of these materials and accepts and uses these materials on these conditions.

It is recommended that experimental samples of urethane and epoxy resins and hardeners be evaluated before production applications commence in order to familiarize personnel with curing and handling properties of the materials. For experimental and production use of urethane and epoxy resins and hardeners, the importance of cleanliness, protective clothing, and good ventilation should be emphasized.

In the event any individuals show any allergic tendencies to the materials used, consult your physician or plant safety department at once for professional advice.

**U.S. DEPARTMENT OF LABOR
WORKPLACE STANDARDS ADMINISTRATION
BUREAU OF LABOR STANDARDS
MATERIAL SAFETY DATA SHEET**

FORM NO. OSHA-20 (MODIFIED)
MAY 1971

MDC CONTROL NO. _____

SECTION I: MATERIAL AND MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
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ADDRESS (NUMBER, STREET, CITY, STATE AND ZIP CODE)

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
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CHEMICAL FAMILY	FORMULA
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SECTION II: HAZARDOUS INGREDIENTS*

PAINTS, PRESERVATIVES/SOLVENTS	%	TLV (UNITS)	ALLOYS AND METALLIC COATINGS	%	TLV (UNITS)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES*				%	TLV (UNITS)

SECTION III: PHYSICAL DATA

BOILING POINT (°F)	SPECIFIC GRAVITY (H ₂ O = 1)
VAPOR PRESSURE (mm Hg.)	PERCENT VOLATILE BY VOLUME (%)
VAPOR DENSITY (AIR = 1)	EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER	

APPEARANCE AND ODOR

SECTION IV: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED)	FLAMMABLE LIMITS	LeI	UeI
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EXTINGUISHING MEDIA

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

*PLEASE DO NOT USE GENERALIZATIONS, SUCH AS PETROLEUM HYDROCARBONS, ALCOHOL, KETONES.
USE SPECIFIC CHEMICAL NAMES, SUCH AS METHANOL, BENZENE, PERCHLOROETHYLENE.

SECTION V: HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

SECTION VI: REACTIVITY DATA

STABILITY	UNSTABLE	CONDITIONS TO AVOID
	STABLE	

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
	WILL NOT OCCUR	

SECTION VII: SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII: SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE)

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (GENERAL)	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
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OTHER PROTECTIVE EQUIPMENT

SECTION IX: SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS

PREPARED BY

DATE